Students experiment with Alka Seltzer tablets to determine the effect of particle size on the rate of chemical reaction at the recent two-day e-Girls adventure at Boise State University.

Engineering workshop targets female high school students

by Marilyn Whitney, *INL Communications*

Rock climbing, a dance pad, germ gel and stomach tablets were probably not what participants expected, but attracting students to engineering and technical careers requires innovative approaches. For the past five years, Boise State University has teamed with industry partners and Idaho National Laboratory to host a two-day e-Girls adventure. The event gives ninth and 10th grade girls the opportunity to explore careers in engineering and science.

INL's Deborah Newby uses a black light to show students the sticking power of germs and why it's important to wash hands well.

This year's e-Girls program was held last month on the BSU campus with 46 participants from Idaho and Montana. Ten of the participants came as part of Montana's Upward Bound program, which seeks to increase student completion of high school and enrollment in postsecondary programs. The program serves students from low-income families and families where neither parent has a four-year degree.

Participants at this year's e-Girls engaged in a series of workshops and seminars facilitated by the Society of Women Engineers, industry professionals and college students. Activities showcased a variety of science and engineering careers. "Dance Pad Mania" helped the girls understand what electrical engineers do and how computer science is applied to create unique programs. The "Physics of Rock Climbing" remained a favorite activity. And, the "Asphalt Cookies" workshop let participants explore the world of civil engineering.

Students conduct experiments with yeast and sugar to learn how glucose produces carbon dioxide and ethanol.

INL molecular microbiologist Deborah Newby guided students through "Microbes and Their Roles." This hands-on activity focused on how glucose and yeast produce carbon dioxide and ethanol. Participants conducted experiments to learn how different amounts of sugar affect how yeast grows to make dough rise. They also investigated how variable amounts of sugar activate yeast in water, causing carbon dioxide to be released. And they coated their hands with Glo Germ, a gel that simulates the behavior of real germs, to compare how clean their hands were before and after washing.

INL chemist Leah Squires provided an overview of energy options for the future and told participants why she joined INL to do research in materials science. Using water and Alka Seltzer tablets, Squires led participants through experiments to test how temperature, particle size and mechanical mixing affected reaction rates. The students recorded their observations, plotted their data and presented their findings to the rest of the group.

"e-Girls was a wonderful experience that allowed me to share my excitement for science with young girls," said Squires, who facilitated for the first time this year. "It was also a great opportunity for INL to reach out to the community and encourage young people to pursue interests in science and engineering, which I would hope to see more of in the future."

Participants test the effect of temperature on reaction rate in an activity lead by INL's Leah Squires.

Student feedback showed a new understanding and appreciation of engineering. As one student put it, "I learned how engineering works in the real world," with another adding, "Engineers like to try everything!"

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